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| 10/576,583 | 04/20/2006 | Kiichi Shimodaira | 062430 | 7372 |
| 38834 7590 08/21/2009 WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036 | | | | |
| EXAMINER | | | | |
| PRINCE, KAJI | | | | |
| ART UNIT | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

Office Action Summary

Application No.

10/576,583

Applicant(s)

SHIMODAIRA ET AL.

Examiner

KAJLI PRINCE

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Prelim. Amdt/Amendment

Receipt is acknowledged of the Amendment filed 02/04/2009.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumitomo Bakelite Co., Ltd. (JP 2003-033991) in view of Matsushita Electric Industrial Co., Ltd. (JP 2002-365624).

1. As to claims 1, 2 and 5-8; Sumitomo Bakelite Co., Ltd. (Sumitomo) teaches a liquid crystal display (LCD) (paragraph [0019]), comprising; an optical resin sheet (laminate layer) comprising a cured resin layer (resin constituent – e.g. epoxy resin)

(paragraphs [0007] thru [0009]) containing glass fiber (glass fabric/cloth) (paragraph [0010]), wherein the ratio of the glass fiber material to a cured resin material, which forms the cured resin layer, is such that the thermal resistance is high and the coefficient of linear expansion is low, for the benefit of high bending strength (Abstract, paragraphs [0007] and [0010]).

However, Sumitomo is silent as to the specific claimed ratio, of the elastic modulus of the glass fiber to the elastic modulus of the cured resin material, of 25 or more.

Matsushita Electric Industrial Co., Ltd (Matsushita) teaches an LCD comprising a resin sheet (resin substrate LCD component) (1). Matsushita teaches the general elastic modulus values of glass and some well known cured resins (e.g. epoxy resin) (paragraphs [0004] and [0006]). The ratio of the elastic modulus of glass (8.0×10^{10}) to the elastic modulus of an epoxy resin (3.0×10^9) is approximately 27.

Thus, at the time the invention was made, one of ordinary skill in the art, given the values for the elastic modulus of glass and epoxy resin, as taught by Matsushita, would have satisfied the claimed ratio when forming the resin sheet, as taught by Sumitomo, for the benefit of high bending strength.

2. As to claims 3 and 4; Sumitomo, as modified by Matsushita, teaches an optical resin sheet according to claim 1; and Sumitomo further teaches performing a hard-coat and gas-barrier process (paragraph [0015]). Thus, forming a hard-coat layer or gas-barrier layer, respectively.

Response to Arguments

Applicant's Arguments filed 27 April 2009 have been fully considered but they are not persuasive.

Applicant argues that Matsushita fails to describe an all optical resin sheet comprising a cured resin layer containing glass fiber (page 3, paragraph 2).

However, Applicant has not claimed an "all" optical resin sheet. Further, Sumitomo teaches a liquid crystal display (LCD), comprising; an optical resin sheet (laminate layer) comprising a cured resin layer (resin constituent – e.g. epoxy resin) containing glass fiber (glass fabric/cloth). Matsushita teaches the general elastic modulus values of glass and some well known cured resins, in order to show that given the materials that were used in Sumitomo to fabricate the optical resin sheet, Sumitomo teaches the claimed ratio, of the elastic modulus of the glass fiber to the elastic modulus of the cured resin material, of 25 or more.

Moreover, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Moreover, Applicant has not claimed an "all" optical resin sheet.

Applicant argues that Matsushita fails to teach the claimed elastic modulus (page 3, paragraph 2). The examiner respectfully disagrees. Matsushita teaches the general elastic modulus values for glass and some well known cured resins (paragraphs [0004]

and [0006]). The ratio of the elastic modulus of glass (8.0×10^{10}) to the elastic modulus of an epoxy resin (3.0×10^9) is approximately 27.

Applicant argues that the elastic modulus ratio of glass described in Matsushita is not the elastic modulus ratio of "glass fiber" contained in a cured resin layer, but the elastic modulus of "a glass substrate." In addition, this glass substrate is regarded merely as a conventional art in Matsushita (page 3, paragraph 3). The examiner respectfully disagrees. Matsushita teaches the general elastic modulus values for glass (paragraph [0004]), which is sufficient to substantially teach the elastic modulus of glass fibers.

Applicant argues that Matsushita describes in the paragraph [0013] that resin containing the "glass fiber" is used in Example 1, however, this resin is used to be printed on a peripheral portion of the substrate and used to seal the liquid crystal, and thus is not used to constitute the substrate itself (page 4, paragraph 1).

However, Sumitomo teaches a liquid crystal display (LCD), comprising; an optical resin sheet (laminate layer) comprising a cured resin layer (resin constituent – e.g. epoxy resin) containing glass fiber (glass fabric/cloth). Matsushita teaches the general elastic modulus values of glass and some well known cured resins, in order to show that given the materials that were used in Sumitomo to fabricate the optical resin sheet, Sumitomo teaches the claimed ratio, of the elastic modulus of the glass fiber to the elastic modulus of the cured resin material, of 25 or more.

Moreover, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually

where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that furthermore, neither Matsushita nor Sumitomo teach or suggest any advantageous effects of the present invention (page 4, paragraph 3). The examiner respectfully disagrees. Specifically, the present invention produces excellent advantageous effects, namely an advantageous effect that the ratio of the elastic modulus of the glass fiber to the elastic modulus of a cured resin material is not less than 25, thereby preventing the light leakage in an oblique direction of the liquid crystal display.

Applicant further argues that it is known that the combining the glass fiber to the epoxy resin can enhance the strength and reduce heat expansion, however, it is not known to prevent the light leakage in an oblique direction of the liquid crystal display by setting the elastic modulus ratio at a predetermined ratio. This is a significant effect which has first been found out by the present inventors (page 4, paragraph 5).

The examiner respectfully disagrees. However, Matsushita teaches the general elastic modulus values for glass and some well known cured resins (paragraphs [0004] and [0006]). The ratio of the elastic modulus of glass (8.0×10^{10}) to the elastic modulus of an epoxy resin (3.0×10^9) is approximately 27. Further, at the time the invention was made, it would have been within the level of ordinary skill to one of skill in the art, as a matter of design choice, given the teachings of Sumitomo and Matsushita, to find the optimum value of the ratio of the elastic modulus of the glass fiber to the elastic

modulus of the cured resin material, for the benefit of high thermal resistance and low coefficient of linear expansion.

Moreover, in response to Applicant's argument that it is not known that combining the glass fiber to the epoxy resin can prevent the light leakage in an oblique direction of the liquid crystal display by setting the elastic modulus ratio at a predetermined ratio, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, it meets the claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAJLI PRINCE whose telephone number is (571)270-1280. The examiner can normally be reached on Monday & Wednesday-Friday, 6:00am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Uyen-Chau Le can be reached on (571) 272-2397. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kajli Prince/
Examiner, Art Unit 2874

/Tina M Wong/
Primary Examiner, Art Unit 2874